Recommended knowledge in Cardiovascular and Metabolic Health

Cardiovascular

1) Structure and function of the cardiovascular and lymphatic system ("Pathophysiology" Chap 31)
2) Alterations of cardiovascular function ("Pathophysiology" Chap 32)

References:

Metabolism

1) Energy homeostasis
2) Regulation of body weight

References:
1. Book chapter
Document provided on the master’s moodle main page

2. Pubmed chapter article

Hypoxia

1) Hypoxia and oxygen sensing
2) Erythropoietin and erythrocytosis

References:

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**Hypoxia**
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Recommended prerequisites/knowledge in Infection, Inflammation and Cancer

**Infection**

1) Mechanisms of action of antibiotics  
2) Biochemical and molecular mechanisms of resistance of antibiotics  
3) Principle bacterial species responsible of infections for humans  
4) Diagnostic techniques of bacteriology in clinical bacteriology

**References:**  
Any Infection and Microbiology Book, e.g.  
*Medical Microbiology: With STUDENTCONSULT online access, 18e (Greenwood, Medical Microbiology) 18th Edition*  
by David Greenwood BSc PhD Dsc FRCPath (Editor), Richard C. B. Slack MA MB BChir FFPHM MRCPath DRCOG (Editor), Michael R. Barer MBBS PhD FRCPath (Editor), Will L Irving (Editor)  
*Series:* Greenwood, Medical Microbiology  
*Paperback:* 794 pages  
*Publisher:* Churchill Livingstone; 18 edition (August 6, 2012)  
*Language:* English  
*ISBN-10:* 0702040894  
*ISBN-13:* 978-0702040894

**Inflammation (Immunology)**

1. Concept of Inflammation  
2. Innate Immunity  
3. Acquired Immunity  
4. Immune Cells  
5. Immune Factors, including Cytokine, Chemokines,  
6. Antigen Processing and Antigen Presentation  
7. Concept of Danger Signals, including TOLL Receptors  
8. Immune Organs, including Thymus, Spleen, Lymph nodes, Mucosa Associated Immune Tissue  
9. Concept of Tolerance, Energy and Allergy  
10. Concept of Vaccine  
11. Concept of Memory

**References:**  
Any Immunology Book, e.g.  
*Immunology at a Glance, 10th Edition*  
J. H. L. Playfair, B. M. Chain  
*ISBN: 978-0-470-67303-4*  
*120 pages*  
Wiley-Blackwell  
*Cellular and Molecular Immunology, 8th Edition*  
A.K. Abbas, A.H. Lichtman, S. Pillai  
*ISBN: 978-0-323-22275-4*  
*533 pages*  
Elsevier Saunders
Cancer

1. The concept of genetic/epigenetic origin of cancer
2. The notion of clonal evolution of cancer
3. The main hallmarks of cancer
4. The notion of tumor – host interaction
5. The principle of the metastatic cascade
6. Some basic principles of therapy (chemo, radio, targeted, immuno)

References:
The Biology of Cancer (2nd edition)
Robert A. Weinberg
Publisher: Garland Science
May 18, 2013
ISBN-10: 0815342209
Pages: 876
English

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Recommended knowledge in Neuroscience

1. Anatomical and functional organization of the nervous system
2. Neurons and glial cells: structural characteristics, general properties, main subtypes
3. Bases of neuronal excitability: resting membrane potential and action potentials
4. Synaptic transmission: types of synapses, neurotransmitters systems, synapses ultrastructure and function, synaptic integration
5. Bases of synaptic plasticity
6. Development and differentiation of the nervous system
7. Fundamentals of some essential brain functions: motor, autonomic, and cognitive (perception, memory, language, executive functions)
8. Basic principles of human neuroimaging (EEG and fMRI) and neurostimulation (TMS)

References:
"Neuroscience: Exploring the Brain" by Bear et al. (4th ed, 2015).
Or
"Principles of Neural Science" by Kandel et al. (5th ed, 2012).

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